

REMARKS

This Amendment is submitted in response to the final Office Action mailed April 25, 2007. Claims 1-37 remain pending in the application and stand rejected. Claims 1, 11, 18, 19, and 22 are amended herein.

Applicants thank the Examiner, Melvin A. Cartagena, for the courtesies extended to Applicants' representative, David W. Dorton, during the personal interview conducted May 23, 2007. During the interview, independent claims 1, 17, and 18 were discussed with respect to the prior art of record, including U.S. Patent No. 6,089,413 to Riney et al. and U.S. Patent No. 4,200,207 to Akers et al. Operation of the inventive dispensing system when the pressure in a recirculation path is greater than the pressure in a dispensing path was discussed, and the Examiner requested that Applicants explain such operation in the next correspondence. Applicants' representative also proposed amendments to the claims, as discussed more fully below. The Examiner agreed that the device of Riney '413 did not appear to be configured to prevent backflow to the dispensing module when the pressure in the recirculation path is greater than the pressure in the dispensing path. The Examiner indicated that he would reconsider the rejections in view of the proposed amendments. Accordingly, Applicants respectfully request reconsideration in view of the personal interview and the remarks below.

Objections to the Specification

The Examiner correctly noted that the amendment filed January 30, 2007, incorrectly identified the insertion point for the replacement paragraph on page 2 of that

amendment. The insertion point should have been "page 14, line 24," not "page 19" as stated in the January 30 amendment. The specification has been amended herein to correct this typographical error and Applicants respectfully request that this objection be withdrawn.

The Examiner also asserted that the replacement paragraph is incorrectly phrased because the pressure upstream of the gear pump should be less than the pressure downstream of the gear pump. Applicants respectfully disagree and refer the Examiner to the remarks presented in the January 30 amendment. Moreover, as explained more fully below, the system includes a pump (not shown in the application) for directing liquid from the melter 22 to the supply channels 20 (e.g., see Application at page 16, lines 1-6). This additional pump can account for the pressure upstream of the gear pump being greater than the pressure downstream of the gear pump. For at least this reason, Applicants respectfully request that this objection to the specification be withdrawn.

Claims Rejected Under 35 U.S.C. §112

Claims 3, 4, 8, 12, and 15 stand rejected under 35 U.S.C. §112, first paragraph, with respect to the recitation of "maintaining a pressure of liquid in the recirculation path greater than a pressure of liquid in the dispensing path as the dispensing valve is cycled from the open condition to the closed condition." During the personal interview, the Examiner questioned the mechanism by which the pressure in the recirculation path could be greater than the pressure in the dispensing path. Applicants respectfully refer

to the Amendment filed January 30, 2007. In that amendment, the specification was amended to correct a typographical error and to explain that the fluid pressure in supply chamber 44 is maintained less than the sum of the fluid pressure in the recirculation passageway 34 and the cracking pressure of the check valve during the characteristic closing time required for the dispensing module 14 to cycle from the open condition to the closed condition. During the personal interview, Applicants' representative noted that a pump is generally used to pump liquid from the melter 22 to supply channels 20. Support for such an arrangement can be found with reference to the Specification at page 14, line 23 to page 15, line 10, and at page 16, lines 1-6. Accordingly, Applicants respectfully submit that pressure in the dispensing path need not always be greater than the pressure in the recirculation path, as alleged in the Office Action. Applicants therefore respectfully request that the rejections under 35 U.S.C. §112 be withdrawn.

Claims Rejected Under 35 U.S.C. §102

Claims 1, 2, 5, 9-11, and 16 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent 6,089,413 to Riney et al. Claims 1 and 11 are the only independent claims of this rejected group and each of these claims has been amended herein to recite that the method includes "preventing backflow of liquid from the recirculation path to the dispensing module when the dispensing valve is cycling from the open condition to the closed condition and the pressure of the liquid in the recirculation path is greater than the pressure of the liquid in the dispensing path" (emphasis added). During the personal interview, the Examiner agreed that Riney '413

did not operate as recited in amended claims 1 and 11, but questioned whether there was support in the Specification for a pump between the melter 22 and the supply channel 20 that would account for the pressure in the recirculation path being greater than the pressure in the dispensing path. As discussed above, the Specification at page 14, line 23 to page 15, line 10, and at page 16, lines 1-6, provides this support. Accordingly, Applicants respectfully request that the rejections of claims 1 and 11 over Riney '413 be withdrawn.

Claims 2, 5, 9, 10, and 16 each depend from independent claim 1, and are therefore in condition for allowance for at least reasons discussed above with respect to claim 1. Accordingly, Applicants respectfully request that the rejections of claims 2, 5, 9, 10, and 16 over Riney '413 be withdrawn.

Claims Rejected Under 35 U.S.C. §103

Claims 6, 13, 17-20, 22, 23, 25, 26, 28-32, and 37 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Riney '413 in view of U.S. Patent No. 4,200,207 to Akers et al. Claims 6 and 13 depend from independent claims 1 and 11, respectively. Claims 1 and 11 each recite "a closed condition for returning liquid from the dispensing module to (or through) a recirculation path." Claims 6 and 13 each further recite "wherein preventing backflow of liquid further comprises positioning a check valve in the recirculation path." During the personal interview, the Examiner agreed that Akers '207 fails to teach or suggest a check valve in a recirculation path from the dispensing module. Rather, the device of Akers '207 includes a variable

restrictor 28 in the return hose or line 26a from dispenser 26. The variable restrictor 28 restricts, but does not prevent, backflow of liquid from the recirculation path to the dispensing module, as set forth in the claims. For at least these reasons, Applicants respectfully request that the rejections of claims 6 and 13 over Riney '413 in view of Akers '207 be withdrawn.

Claims 17, 18, 19, 22, 25, 28, 29, 31, and 37 are the only remaining independent claims of this rejected group. Claims 18, 19, and 22 are directed to apparatus for applying liquid to a substrate and recite dispensing modules including recirculation outlets coupled in fluid communication with a recirculation passageway. Claims 18, 19 and 22 have been amended herein to recite that the check valves prevent backflow of liquid from the recirculation passageway through the recirculation outlet to a dispensing module. Amended claims 18, 19, and 22 are not taught or suggested by the combination of Riney '413 and Akers '207. Specifically, the Examiner admits that Riney '413 fails to teach or suggest a check valve. During the personal interview the Examiner agreed that Akers '207 fails to teach or suggest a check valve that prevents backflow of liquid from a recirculation passageway through a recirculation outlet in a dispensing module. Rather, pressure relief valve 9 of Akers '207 is disposed in manifold block 125 and does not prevent backflow of liquid from a recirculation passageway through a recirculation outlet in a dispensing module. As discussed above, variable restrictor 28 is not a check valve and does not prevent backflow of liquid, as set forth in the claims. For at least these reasons, Applicants respectfully request that the rejections of claims 18, 19, and 22 over Riney '413 in view of Akers '207 be withdrawn.

Claim 20 depends from independent claim 19, and claim 23 depends from independent claim 22. Accordingly, claims 20 and 23 are in condition for allowance for at least the reasons discussed above with respect to independent claims 19 and 22. Applicants therefore respectfully request that the rejections of claims 20 and 23 over Riney '413 in view of Akers '207 be withdrawn.

Claims 17, 25, 28, 29, and 31 are each directed to apparatus for applying liquid to a substrate. Claims 17 and 25 each recite check valves positioned in recirculation outlets. The recirculation outlets are part of the dispensing modules. During the personal interview, the Examiner admitted that neither Riney '413 nor Akers '207 teaches or suggests a check valve in a dispensing module. For at least these reasons, Applicants respectfully request that the rejections of claims 17 and 25 over Riney '413 in view of Akers '207 be withdrawn.

Claim 26 depends from independent claim 25 and is therefore in condition for allowance for at least the reasons discussed above with respect independent claim 25. Accordingly, Applicants respectfully request that the rejection of claim 26 over Riney '413 in view of Akers '207 be withdrawn.

Independent claims 28, 29, and 31 are directed to apparatus for applying liquid to a substrate, and recite check valves positioned in recirculation passageways of an adapter plate. Neither Riney '413 nor Akers '207 teaches or suggests a check valve in a recirculation passageway of an adaptor plate, as set forth in these claims. Accordingly, Applicants respectfully request that the rejections of claims 28, 29, and 31 over Riney '413 in view of Akers '207 be withdrawn.

Claim 30 depends from independent claim 29 and claim 32 depends from independent claim 31. Accordingly, claims 30 and 32 are each in condition for allowance for at least the reasons discussed above with respect to independent claims 29 and 31, and Applicants respectfully request that the rejections of these claims over Riney '413 in view of Akers '207 be withdrawn.

Independent claim 37 is directed to an apparatus for applying liquid to a substrate and recites:

a dispensing module including an inlet coupled in fluid communication with said distribution passageway and a recirculation outlet coupled in fluid communication with said recirculation passageway, said recirculation outlet and said recirculation passageway defining at least a portion of a recirculation path extending to said supply channel; and

a check valve positioned in said recirculation path and configured to prevent backflow of the liquid within said recirculation path (emphasis added).

Applicants respectfully request that the rejection of claim 37 be withdrawn because Riney '413 wholly fails to teach or suggest a check valve, and because Akers '207 fails to teach or suggest a check valve in a recirculation path that includes a recirculation outlet in a dispensing module, as discussed above.

Claims 7, 14, 21, 24, 27, and 33-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Riney '413 and Akers '207, in further view of U.S. Patent No. 5,523,682 to Leon. Claim 36 stands rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Riney '413, Akers '207, and Leon '682, in further view of U.S. Patent No. 4,543,649 to Head et al. Claim 33 is the only independent claim of this rejected group and is directed to a method of applying liquid to

a substrate, including:

returning the liquid from the dispensing module to a recirculation path in the manifold while the dispensing module is in the recirculating condition; and

sending a signal to a control coupled with the dispensing module indicating that the dispensing module is in the recirculating condition.

As noted in the Amendment filed January 30, 2007, the rejection is not clear as to which references were relied upon to obtain each step recited claim 33. Nevertheless, Applicants respectfully traverse the rejection of claim 33 because neither Riney '413 nor Akers '207 teaches or suggests "sending a signal to a control coupled with the dispensing module indicating that the dispensing module is in the recirculating condition." Leon '682 is directed to a system that determines the position of an electrically conductive element movably positioned in a housing, but does not teach or suggest sending a signal to a control coupled to a dispensing module to indicate that the dispensing module is in a recirculating condition, as set forth in claim 33. For at least these reasons, Applicants respectfully request that the rejection of claim 33 over the combination of Riney '413, Akers '207, and Leon '682 be withdrawn.

Claims 34-36 each depend from independent claim 33 and are therefore in condition for allowance for at least the reasons discussed above, and because the further combination of Riney '413, Akers '207, and Leon '682 with Head '649 fails to cure these deficiencies.

Claim 7 depends from independent claim 1, claim 14 depends from independent claim 11, claim 21 depends from independent claim 19, claim 24 depends from

independent claim 22, and claim 27 depends from independent claim 25. Accordingly, Applicants assert that claims 7, 14, 21, 24, and 27 are each in condition for allowance for at least the reasons discussed above with respect to independent claims 1, 11, 19, 22, and 25, and because the further combination of Riney '413 and Akers '207 with Leon '682 fails to cure the deficiencies of Riney '413 and Akers '207 discussed above.

Conclusion

In view of the foregoing amendments to the claims and the remarks set forth herein, Applicants believe this case is in condition for allowance and respectfully request allowance of the pending claims. If the Examiner believes any issue requires further discussion, the Examiner is respectfully asked to telephone the undersigned attorney so that the matter may be promptly resolved. The Examiner's prompt attention to this matter is appreciated.

Applicants do not believe that any fee is due in connection with this submission. However, if any fees are necessary to complete this communication, the Commissioner may consider this to be a request for such and charge any necessary fees to Deposit Account No. 23-3000.

Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

By: /David W. Dorton/
David W. Dorton, Reg. No. 51,625

2700 Carew Tower
441 Vine Street
Cincinnati, OH 45202
(513) 241-2324 (voice)
(513) 241-6234 (facsimile)